Distracted Driving Case Study: Friends Just Want To Have Fun!
Debbi Thomson, MSN, CPNP
Wake Forest Baptist Health Center
Winston Salem, NC

Disclosure Information
The speaker has no conflicts to disclose.

Learning Objectives
• Identify specific brain injuries that are related to the mechanism of an MVC
• Discuss management and sequelae of severe brain injuries
• Recognize common distractions which affect teen drivers, and recommend safe driving practices
14 yo girl, 1st day of school 2015, just moved from NY to NC
Invited into car full of teenagers for ride home
Middle backseat passenger, wearing lap belt
Driver going 75 mph on 2 lane road, lost control on curve
Driver overcorrected
Head-on collision into school bus, 35 mph from opposite direction
Death of front seat passenger, driver & passengers extricated, transported to local adult trauma center, our patient unresponsive
More of the Patient Story

- GCS 4 at scene, unable to be intubated
- Intubated at adult trauma center and resuscitated
- Transported to our pediatric trauma center ED, then PICU
- VS: T 101.7, HR: 123 RR: 29, BP 114/54, O2 Sat: 100% on 35% O2
- GCS: 8T
- Labs: Hgb: 10.9 Hct: 32.3
- CT head: right frontal subdural hematoma, left cerebellar intraparenchymal hemorrhage (punctate hemorrhage), no midline shift

MVC Collision Factors Influencing TBI

- Impact against a fixed or moving object
- Angle of impact
- Velocity change/vehicle deformation
- Acceleration and deceleration
- Rotation—can cause shearing (DAI)
- Seatbelts influence severity and sites of brain lesions
  - Un-seatbelted passengers have more occipital/parietal injuries from ejections
  - Seat-belted-frontal brain injuries, more protection for lower body

Crash Injury Research and Engineering Network (CIREN)

- CIREN is a multi-disciplinary study, involving trauma surgeons, research personnel, a crash investigator, and engineers to analyze the motor vehicle crashes and determine how each occupant injury was caused (sponsored by NHTSA and automobile industry.)
- Initiated by NHTSA in 2006 to connect medical information & engineering evidence
- Data available to public on CIREN website
- Occupant age, Ht/Wt, position in vehicle, injuries, make/model
Management of Pediatric TBI  
*(2012 Guidelines for TBI)*

- Intracranial pressure monitoring GCS ≤8
  - Treat ICP >20
  - CPP minimum 40 mm Hg
- Hypersmolar agents for ↑ ICP
  - 3% hypertonic saline
  - No recs for mannitol
- Preventing hypothermia for 1st 24 hours
- Treat and prevent hypotension
- Seizure prophylaxis?
- Corticosteroids-not recommended

Outcomes for our patient

- Awakened slowly reintubated day 3 for worsening neuro exam, CT scan- worse-layering subdural ? DAI
- Hospitalized 16 days, G-tube for feeding, non-verbal until day 16
- Acquired Brain Injury Rehab for 3 weeks
- Outpatient therapies for 3 months, homebound school
- Still has chronic headaches, distractibility, difficulty concentrating
- Some loss of balance, but no falls
- Dx: Impaired cognition, needs Neuropsychology testing
- She would like to return to school

Distractions for Teen Drivers

- Cell phones, texting
- Friends as passengers
- Grooming, eating
- Inattentive to external environment
- Music

**Interventions:**
- Graduated licenses with hour & passenger restrictions
- Enhancing driving skills (scanning, watching other drivers, minimizing distractions)
Audience Response Question #1

Which collision factor is most closely associated with diffuse axonal injury (DAI)?

a. angle of impact  
b. acceleration  
c. rotation  
d. velocity

Audience Response Question #2

Which is a 2012 Pediatric TBI Guideline recommendation for ICP >20?

a. hypertonic 3% saline  
 b. mannitol  
c. anti-epileptics  
d. corticosteroids
Audience Response Question #3

Which distraction for teen drivers causes the highest number of distraction-related car crashes?

a. Texting  
b. Other passengers  
c. Grooming  
d. Eating

References


www.NHTSA.gov/CIREN